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## Somatisation and anger are associated with symptom severity of posttraumatic stress disorder in severely traumatised refugees and asylum seekers

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### Summary

**BACKGROUND:** Most research on refugee mental health has focused on posttraumatic stress disorder (PTSD). Besides PTSD, however, traumatised refugees are often burdened by comorbid somatic and psychiatric conditions, as well as postmigration living difficulties (PMLD). It is unclear how these conditions interfere with presentation and treatment of PTSD.

**METHODS:** This preliminary cross-sectional study investigated 134 severely traumatised refugees and asylum seekers in treatment in two psychiatric outpatient units in Switzerland. Trauma exposure, PMLD, somatisation and explosive anger were assessed and related to symptom severity of PTSD using correlation and regression analyses. **RESULTS:** PTSD symptoms were significantly related to somatisation, anger, PMLD and trauma exposure. Regression analysis revealed that PTSD symptoms were mainly predicted by somatisation and anger.

**CONCLUSIONS:** Symptom severity of PTSD is associated with somatisation, explosive anger and, to a lesser extent, PMLD. Standard PTSD treatment may benefit from implementing targeted strategies to assess and address these factors in traumatised refugees.

**Key words:** PTSD; explosive anger; comorbidity; somatisation; refugees

### Introduction

The many wars and armed conflicts of recent years, often specifically targeting civilian populations, have led to a dramatic increase in the numbers of internally displaced persons and refugees worldwide [1]. By definition, refugees are exposed to persecution and, therefore, severe traumatic experiences are very common. A dose-response relationship between trauma exposure and psychological distress in refugees is well documented [2–4]. Correspond-

ingly, research has consistently demonstrated that these experiences have a deleterious impact on mental health [5, 6] and account for substantially increased prevalence rates of mental disorders, particularly posttraumatic stress disorder (PTSD), in refugee populations [4].

Though evidence-based treatment options for PTSD in terms of trauma-focused psychotherapy exist [7, 8], these interventions are not equally effective under all conditions. Even after undergoing manualised trauma therapy in research trials, between 40 and 60% of participants retain their PTSD diagnosis at follow-up (e.g. [6]), and the majority of patients continue to have substantial residual symptoms after treatment [10]. Besides symptom severity and chronicity of PTSD, comorbid psychiatric disorders, high anger scores and physical health problems have been associated with poorer treatment response in non-refugee groups [10–17]. PTSD and comorbid somatic symptoms including pain have been shown to be associated with increased functional impairment, higher rates of healthcare service utilisation and increased healthcare costs as compared with PTSD patients without pain [18–21]. Particularly high comorbidity rates of PTSD and somatic symptoms have been demonstrated in refugees. In a clinical sample of multiply traumatised outpatients with a refugee background, chronic pain at clinical levels was present in 88% of patients with a current PTSD diagnosis [22].

Emotion dysregulation in general and anger in particular have attracted increasing interest in PTSD research over the past two decades [23, 24]. Dysregulated anger is highly correlated with physical health problems, most notably coronary heart disease. Further, it is also associated with elevated risks of relationship problems including family impairment, aggressive interpersonal behaviour, workplace and employment difficulties, property damage and traffic injuries, as well as elevated risk of criminal acts (for overview see reference [25]). Several studies found anger to negatively predict PTSD treatment outcome in trauma survivors [12, 13, 26], and standard PTSD treatment appears

to be partly, but not sufficiently, effective in reducing anger symptoms [27]. Though few studies have addressed anger in refugee samples, explosive anger has been linked to exposure to human rights violations in the context of conflict and persecution [28, 29]. A study of traumatised Cambodian refugees found severe family-directed anger associated with PTSD in 48% of participants, resulting in somatic arousal, trauma recall and fears of bodily dysfunction [30]. The mental health of severely traumatised refugees and asylum seekers is becoming an increasingly important public health issue in hosting societies. Preliminary research suggests that somatisation and anger might be particularly prominent in traumatised refugees and therefore may complicate PTSD treatment in this group [31]. In addition, refugee mental health has consistently been shown to be affected not only by the sequelae of traumatic experiences, but also by a variety of post-migration factors such as living difficulties, visa status, or separation from family members [32–35]. In turn, psychological impairment in refugees has been demonstrated to be highly correlated with poor social integration in the hosting society, for example with regard to financial independence and language proficiency [36]. Despite these substantial challenges and the huge personal and societal costs associated with mental health problems in traumatised refugees, evidence with regard to treatment implications is very scarce. Research addressing best practice treatment and outcome predictors is crucially needed in order to allow for proper resource allocation and differential indication of various treatment approaches for this highly vulnerable population. The goal of this exploratory cross-sectional study was to examine factors associated with increased symptom severity of PTSD. Based on the existing literature on predictors of treatment response in veterans, we hypothesised that increased symptom severity of PTSD would be associated with trauma exposure, somatisation, explosive anger and postmigration living difficulties (PMLD).

## Methods

### Participants

Participants were refugees and asylum seekers in treatment in two psychiatric outpatient units for victims of torture and war, in Zurich and Bern, Switzerland. Due to the cross-sectional study design, participants were assessed in different stages of therapy, including baseline, treatment and posttreatment stages. In view of the multitude of clinical presentations, interventions were largely individualised, depending on patients' symptom profiles and subjective focus of distress. Psychotherapy was delivered by experienced psychologists and psychiatrists and included trauma-focused therapy (i.e. narrative exposure therapy [37]) as well as nonspecific interventions. In addition, patients were offered psychotropic medication, social counselling, and physical and movement therapy if needed.

Patients aged 18 years or older and speaking one of the study languages (German, English, Turkish, Arabic, Farsi or Tamil) were included in the study. Current psychotic symptoms, severe dissociative symptoms and acute suicidality, as established by experienced clinicians, led to exclu-

sion. A total of 152 patients were invited, and 137 (90.1%) agreed to participate. Of these, three patients failed to attend the research session. Ultimately, 134 participants were assessed.

### Measures

All measures were translated and back-translated by accredited translators in accordance with gold-standard translation practices [38]. Discrepancies were rectified jointly by the research team and independent bilingual individuals who were experienced in working with health-related questionnaires.

Exposure to traumatic events was indexed on a measure derived from combining the respective scales of the Harvard trauma questionnaire [39] and the posttraumatic diagnostic scale (PDS) [40, 41]. Overall trauma exposure was represented by a count of traumatic event types experienced and/or witnessed by each participant. Symptoms of PTSD in the past month were measured using the PDS, with four additional items being included consistent with the DSM-5 criteria for this disorder [42]. The scale yields a continuous PTSD symptom score (range 0–60) and has been used with numerous refugee groups [43–45]. Cronbach's alpha in this study was  $\alpha = 0.94$ .

Somatic symptoms were measured with the 12-item subscale of the symptom checklist-90 (SCL-90) [46, 47]. Cronbach's alpha in the present study was  $\alpha = 0.90$ . Based on the DSM-4 criteria for intermittent explosive disorder [48], a five-item scale to index explosive anger reactions was developed for this study. Items indexed the frequency of sudden, overwhelming episodes of anger, the extent to which these episodes were out of proportion to triggering events, the frequency with which these episodes led to interpersonal violence and destruction of property and the extent to which they interfered with the individual's daily life. Each item was scored from 0 = "never" to 3 = "often". A final total score was computed. The internal consistency was  $\alpha = 0.78$ .

PMLD were assessed with the postmigration living difficulties checklist (PMLDC) [49, 50]. This 17-item scale (range 0–68) was adapted to the Swiss context and examined the extent to which postmigration challenges had been of concern to the individual over the past twelve months. Items are rated on a five-point scale (0 = "not a problem" to 4 = "very serious problem"). Responses scored at least 2 (moderately serious problem) were considered positive, yielding a total count of living difficulties. This scale has consistently been identified as a predictor of mental health among displaced populations [51–53]. Cronbach's alpha for the present study was  $\alpha = 0.88$ .

### Procedure

The study was approved by the Ethics Committees of the Cantons of Zurich and Bern, Switzerland. The purpose of the study was initially explained to each participant by a study team member. Written informed consent was obtained, with participants being informed they were free to withdraw from the study at any time without penalty. Questionnaires were administered using a therapist-assisted computer-based assessment tool (MultiCASI) [54]. In MultiCASI, self-report questionnaires are presented in

written or auditory form in their respective mother tongue to participants on an electronic tablet. Assessments were supervised by a psychiatrist, clinical psychologist or a master-level student of clinical psychology. Participants were reimbursed CHF 40 (approximately USD 40) for participation.

### Data analysis

Analyses were conducted using SPSS Version 22. There was less than 5% missing data on any of the variables included in the analyses. Descriptive statistics are given in terms of means and standard deviations (SDs) in continuous variables, and counts and percentages in categorical variables. First, the relationship between PTSD symptom severity and age, duration of stay, trauma exposure, PMLD, somatisation, and explosive anger was examined by Pearson's correlations. Second, we conducted a regression analysis to investigate the role of key variables in predicting PTSD symptoms while controlling for other predictors. The following variables were entered into the model simultaneously: age, gender, duration of stay, visa status, trauma exposure, PMLD, somatisation, and explosive anger.

## Results

### Sample characteristics

Participants were, on average, 42.1 years old (SD = 9.9); 78% were male, in line with the gender distribution among asylum seekers in Switzerland. Participants originated from a variety of countries, including Turkey (53%,  $n = 71$ ), Iran (11%,  $n = 15$ ), Sri Lanka (8%,  $n = 11$ ), Iraq (4%,  $n = 6$ ), Bosnia (4%,  $n = 6$ ) and others (18%,  $n = 25$ ). With regard to visa status, 22% ( $n = 30$ ) were asylum seekers, 10% ( $n = 13$ ) had temporary visa status, 25% ( $n = 34$ ) had secure

visa status, 31% ( $n = 42$ ) had permanent residency permits, and 11% ( $n = 15$ ) were naturalised Swiss citizens.

### Impairment

Participants were severely traumatised, reporting the experience of a mean of 12.3 (SD 4.5) different traumatic event types. Roughly 85% ( $n = 114$ ) had experienced torture, 77% ( $n = 103$ ) had experienced imprisonment and 75% ( $n = 101$ ) reported combat experience (table 1). Accordingly, the mean PTSD symptom score was 33 (SD 13.8, scale range 0–60), corresponding to a moderate to severe symptom severity. Participants suffered from substantial somatic complaints corresponding to a mean SCL symptom score of 1.9 (SD 0.85, scale range 0–4). Explosive anger scored a mean of 1.3 (SD 0.71, scale range 0–3), representing occasional interference with the individual's daily life. Despite a mean length of residence in Switzerland of 9.0 years (SD 6.7), PMLD were still of remarkable concern. Participants reported a mean of 9.8 (SD 4.2, scale range 0–17) types of living difficulties representing a moderately serious, serious or very serious problem. Difficulties with isolation, employment, communication, and worries related to family members left behind were experienced most commonly (table 2).

### Analytic results

The results of the correlation analysis are presented in table 3. The analysis showed significant correlations between PTSD symptoms and somatisation, anger, PMLD and trauma exposure. There was no significant correlation between PTSD symptoms and age, or duration of stay in Switzerland. The results of the regression analysis are shown in table 4. The overall model was significant ( $F(8, 124) = 28.624$ ,  $p < 0.000$ ), with this model accounting for 63% of the variance in PTSD symptoms. Significant pre-

**Table 1:** Lifetime exposure to trauma types ( $n = 134$ ).

Trauma type	n (%)
Torture	114 (85.0)
Imprisonment	103 (76.9)
Enforced isolation from others	103 (76.9)
Nonsexual assault by stranger	101 (75.4)
Combat situation	101 (75.4)
Being close to death	98 (73.1)
Murder of a family member or friend	87 (64.9)
Unnatural death of a family member or friend	84 (62.7)
Lack of food or water	84 (62.7)
Forced separation from family member	81 (60.4)
Ill health without access to medical care	76 (56.7)
Serious physical injury	72 (53.7)
Lack of shelter	71 (53.0)
Brainwashing	64 (47.8)
Disappearance or kidnapping	63 (47.0)
Nonsexual assault by a family member or someone you know	59 (44.0)
Serious accident, fire or explosion	55 (41.0)
Murder of one or more strangers	50 (37.3)
Natural disaster	49 (36.6)
Sexual assault by a stranger	45 (33.6)
Life-threatening illness	37 (27.6)
Sexual contact when younger than 18 with someone $\geq 5$ years older	24 (17.9)
Sexual assault by a family member or someone you know	20 (14.9)

dictors of PTSD symptoms were age (beta  $-0.24$ ), somatisation (beta  $0.47$ ), anger (beta  $0.32$ ), and PMLD (beta  $0.13$ ).

## Discussion

This cross-sectional study examined a variety of factors potentially associated with high levels of PTSD symptoms in a clinical sample of severely traumatised refugees and asylum seekers. Positive correlations with PTSD severity were found with somatisation, explosive anger and PMLD, over and above trauma exposure. Regression analysis showed a moderate association of PTSD symptom severity with somatisation and anger, and, to a lesser extent, with PMLD, but not with trauma exposure or sociodemographic

variables such as duration of stay in Switzerland or visa status.

The main finding is the strong association of PTSD severity with somatisation. The frequent co-occurrence of PTSD with physical health complaints is well documented (for reviews see [55, 56]). The recognition of the close association of trauma, PTSD and somatic presentations has a long history and has been mapped into earlier conceptualisations of PTSD such as “railway spine” or “soldier’s heart” [57]. Psychological, behavioural and biological factors as well as the complex interactions between these factors serve as possible mechanisms through which PTSD may be associated with physical health [55, 56, 58]. Somatic presentations in PTSD patients may represent the culmination of as different conditions and concepts as trauma-independent somatic disorders; somatic conditions related to the in-

**Table 2:** Post-migration living difficulties experienced as moderately severe, severe, or very severe (past year, n = 134).

Living difficulty	n (%)
Loneliness, boredom or isolation	113 (84.3)
Worries about family back home	108 (80.6)
Being unable to return to home country in an emergency	101 (75.4)
Separation from family	99 (73.9)
Difficulty learning German	98 (73.1)
Difficulties with employment	88 (65.7)
Communication difficulties	84 (62.7)
Being fearful of being sent back to country of origin in the future	82 (61.2)
Difficulties obtaining financial assistance	75 (56.0)
Difficulty obtaining appropriate accommodation	75 (56.0)
Not enough money to buy food, pay the rent or buy necessary clothes	72 (53.7)
Discrimination	63 (47.0)
Worries about not getting access to treatment for health problems	63 (47.0)
Difficulties in interviews with immigration officials	54 (40.3)
Not being recognised as a refugee	53 (39.6)
Conflicts with social workers / other authorities	50 (37.3)
Ethnic conflicts	31 (23.1)

**Table 3:** Pearson’s correlations of factors potentially related to PTSD (n = 134).

		1	2	3	4	5	6	7
1	PTSD							
2	Age	−0.110						
3	Duration of stay	0.102	0.48**					
4	Trauma exposure	0.31**	−0.025	0.01				
5	PMLD	0.38**	−0.10	−0.27**	0.20*			
6	Somatisation	0.69**	0.08	0.03	0.23**	0.37**		
7	Anger	0.63**	0.07	0.23**	0.20*	0.27**	0.51**	

\*p < 0.05, \*\*p < 0.01 (p-values are unadjusted)

PMLD = postmigration living difficulties; PTSD = posttraumatic stress disorder; duration of stay = in Switzerland

**Table 4:** Multiple regression analysis for demographic variables, trauma exposure, PMLD, somatisation and anger, with PTSD symptom severity.

	B	SE B	β	p
Constant	0.716	2.62		0.007
Age	−0.016	0.004	−0.235	0.000
Gender	−0.085	0.091	−0.051	0.354
Duration of stay	0.014	0.007	0.136	0.053
Visa status	0.068	0.091	0.047	0.455
Trauma exposure	0.014	0.009	0.093	0.101
PMLD	0.021	0.010	0.126	0.046
Somatisation	0.399	0.057	0.470	0.000
Anger	0.306	0.065	0.319	0.000
R <sup>2</sup>		0.626		
F		28.624		0.000

Dependent variable: PTSD symptom score; PMLD = postmigration living difficulties; PTSD = posttraumatic stress disorder; visa status = binary variable (secure, insecure)

creased allostatic load or to unfavourable health habits associated with PTSD; traumatic injuries and tissue damage; autonomic, neuroendocrine and immunological dysregulation; genetic and epigenetic predisposition; somatoform disorders, particularly dissociative or conversion disorders; somatic intrusions; or culture-dependent expression of non-specific psychological distress.

In contrast to the extensive literature on the association between PTSD and somatic syndromes, there is a surprising dearth of evidence with regard to treatment implications, notably with regard to groups with typically high trauma exposure such as veterans and refugees [59, 60]. A recent meta-analysis on spontaneous long-term remission rates of PTSD, i.e., without specific treatment, found lowest remission rates in studies on PTSD related to physical disease [14], suggesting a maintaining effect of somatic comorbidity on PTSD. In patients with severe combat-related PTSD symptoms, poor physical health status was found to be associated with a poorer treatment trajectory regarding PTSD symptoms [11]. Only very few studies examined the effect of standard PTSD treatments on PTSD-associated somatic syndromes, and in general found positive, though partial effects on self-reported physical complaints in female assault victims [61]. It is, however, unclear whether these results are generalisable to men or to individuals suffering from PTSD following other types of trauma.

The association of somatisation with increased symptom severity of PTSD found in our sample suggests several implications. First, somatic symptoms should be routinely assessed. This is not self-evident: physical symptoms, except for vegetative complaints or somatic intrusions, are usually not in the focus of, or sometimes not even addressed by, typical trauma-focused psychotherapy. In view of the multitude of potential contexts of somatic complaints, an aetiological distinction is not possible simply by means of exploration or psychometric testing. Therefore, physical complaints are often uncritically committed to the sphere of competence of somatic colleagues. Given the mutual dependence of biological and psychological factors in PTSD patients, a close and interdisciplinary collaboration with somatic medicine is advisable in order to distinguish between complaints in need of somatic treatment and symptoms accessible for psychological interventions. On the other hand, physicians need to screen for PTSD when patients with a refugee background present with nonspecific physical complaints and pain, particularly since somatic symptoms are often considered more legitimate to express, whereas manifestation of psychological distress carries a negative stigma, which may prevent refugees from seeking psychiatric care (for review see [62]).

Second, complementary to standard trauma-focused psychotherapy, specific psychological treatment interventions for comorbid somatic symptoms, particularly chronic pain, may be beneficial. Several synthesising models have conceptualised the association of PTSD and chronic pain in a cognitive-behavioural framework including the shared and mutually maintaining clinical features of feared (internal and external) stimuli, corresponding attentional biases and hypersensitivity, maladaptive beliefs and catastrophising thinking, resulting in avoidance as a primary coping strategy, in negative enforcement and in the erosion

of adaptive resources that often accompanies a longer-term course of chronic PTSD as well as chronic pain [63]. Pain coping strategies have been found to partially mediate the relationship between PTSD and pain severity [64]. Specific interventions for PTSD and comorbid chronic pain have been developed and successfully implemented in veterans [63]. These interventions usually include elements such as: psychoeducation; exposure to avoided stimuli of both chronic pain and PTSD; interventions to reduce depression as a potential mediator between pain and PTSD; cognitive restructuring challenging maladaptive automatic thoughts and strengthening sense of agency; and correcting attentional biases to potentially pain-inducing or threatening stimuli [65]. These interventions should be evaluated with regard to their suitability and effectiveness in other trauma groups such as refugees.

The second notable finding of this study is the association of PTSD with explosive anger. Though neither population nor trauma type specific, problematic anger in PTSD is particularly prominent in veterans, crime victims or survivors of torture [66]. Several conceptualisations have tried to explain this relationship [67]. Theory has identified various precipitants of anger, including exposure to injustice [68] and frustrations in achieving life goals [69]. Silove et al. found preliminary evidence for both pathways in a sample from postconflict Timor-Leste [28, 29], supporting a “cycles of violence model” which postulates that exposure to gross human rights violations provokes feelings of extreme rage, compounded by frustrations in the postconflict environment, e.g. in terms of socioeconomic deprivations [70, 71]. In view of the high trauma exposure and the substantial extent of PMLD found in our sample, it can be hypothesised that the cycles of violence model may be applied not only to postconflict, but also to postmigration populations. Though further research is needed, our findings are compatible with the suggestion of a dual focus for psychosocial recovery programmes for refugees in postmigration settings. Such an approach would give emphasis to addressing individual feelings of injustice and anger related to past human rights violations while at the same time drawing attention to ameliorating ongoing frustrations related to the socioeconomic drawbacks of a postmigration living situation [29].

In addition, a number of interventions have been developed to assist individuals in managing their anger and aggression. These interventions typically involve cognitive-behavioural techniques such as challenging anger-related automatic thoughts and teaching relaxation skills, effective communication skills and constructive coping strategies [72]. Although research has supported the effectiveness of anger treatments in general [73, 74], only very few studies have been conducted to examine these interventions in PTSD patients. As they provide support for the effectiveness of anger interventions among veterans with PTSD [15, 75, 76] and as treatment of anger was found to also reduce PTSD symptoms [77], it may be useful for clinicians to incorporate thorough assessment of anger and aggression into their practice. Further, clinicians may consider supplementing standard PTSD treatment with targeted anger reduction strategies.



## Limitations

First, while we used transculturally validated measures whenever available, participants were from numerous cultural backgrounds, and thus it was not possible to use measures validated with each cultural group. Second, self-report measures were implemented instead of clinician-administered diagnostic interviews. A strength of this study was the examination of an unselected clinical sample under naturalistic, real-life treatment conditions, which enhances generalisability. Another strength was the use of a tablet-based therapist-assisted assessment tool, which allowed refugees to be assessed in their respective mother tongues independently from their level of education.

## Conclusions

Clinical experience, as well as previous research, demonstrates that traumatised refugees are often heavily burdened by a complex array of comorbid physical and psychological conditions resulting from pre- and postmigration experiences. While evidence-based treatment approaches for PTSD exist, there is scarce evidence on how comorbid conditions interfere with treatment, and how they should best be addressed. This study indicates that comorbid somatic complaints, explosive anger, and, to a lesser extent, PMLD, are related to increased PTSD severity. Treatment outcome might be improved by adding complementary approaches including assessment and specific interventions for these additional challenges. Psychotherapists should build a close and interdisciplinary collaboration with somatic medicine in order to distinguish between complaints in need of somatic treatment and symptoms accessible for psychological interventions, whereas physicians should consider PTSD when patients with a refugee background present with nonspecific somatic complaints. A better understanding of the physical health correlates of PTSD and the psychological processes that may underpin the association of PTSD, anger and PMLD would inform prevention and treatment practices, which in turn may aid in reducing the individual, social, and economic burden created by the disorders [78].

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